

to the study of population, and now, when colonial questions are much in the public eye, it makes a specially welcome and timely appearance.

G. F. McCLEARY.

GENETICS

Birch, Carroll la Fleur, M.D. *Hæmophilia. Clinical and genetic aspects.* Illinois Medical and Dental Monographs, vol. I, No. 4. Urbana, 1937. University of Illinois. Pp. 151.

THIS beautifully illustrated book represents the result of nine years of painstaking research into the clinical and genetical aspects of hæmophilia. It is an invaluable source of information, there being not less than seventy-five new pedigrees, some of them very extensive. The amount of work represented in this book will be fully appreciated by all those who have ever collected data on human genetics. The descriptions are extensive, and the reliability of particular charts has been discussed throughout by the author. Each pedigree includes at least one patient seen by the author, and many of the patients have been under her care for several, up to nine years.

The clinical side, often neglected elsewhere, gets its due share in this publication; this makes it clear that there are hæmophilic families with severe symptoms, and others, in which the disease tends to take a milder course; the existence of several allelomorphs for hæmophilia suggests itself, though the author herself has not drawn this conclusion explicitly. In hæmophilia, the time of coagulation of the blood is greatly increased; but the author shows that one and the same patient may have widely different coagulation-times at different periods; there occur cyclic changes, which, in some cases, seem to be influenced by the time of the year; on occasion, coagulation-time may be near normal, and the knowledge of this fact is important both in collecting data for genetical purposes and in judging the

possible effects of any new kind of treatment.

A large proportion of hæmophiliacs die before reaching maturity, and many others do not marry. This situation has at one time led to the belief that the actual bleeders themselves would not transmit the disease. Lössen's "law," based on the fact that in many pedigrees the disease is passed on entirely in the female line through women heterozygous for hæmophilia ("conductors"), formulated this assumption; it is certainly erroneous. In 11 out of 75 charts collected by the author there are records of 35 married hæmophiliacs. They begot 63 sons, all of whom were normal; in their offspring the disease will not reappear. But the 57 daughters of hæmophiliacs are all transmitters; 21 of them left male offspring, and of these 24 were hæmophiliacs and 17 were normals, which is in excellent agreement with the expectation.

Geneticists will be particularly grateful to the author for the trouble she has taken over pedigrees containing only a single hæmophiliac. In many of these cases, as the author points out, this may be due to a run of luck; the gene for hæmophilia may have been present all the time, but it only once got into a male, who could show it. But there is at least one large pedigree, in which, it might be suggested, a fairly strong case could be made that the hæmophilia gene has arisen anew as a result of mutation. It will be recalled that Professor J. B. S. Haldane has recently estimated the mutation frequency of the hæmophilia gene, and it may very well be that charts 1 to 3 represent a case where this has actually happened.

In a work with so many merits, it is a disagreeable task for the reviewer to point out petty errors. Nevertheless, even at the risk of appearing to find fault with an excellent book, it should be mentioned that Dr. Birch uses a somewhat misleading genetical terminology. She uses the symbol "X" to designate what geneticists have agreed to call the Y-chromosome. As the terms "X" and "Y-chromosome" have a generally accepted meaning which differs from that intended by the author, this may lead to confusion. Furthermore, in the

discussion of the behaviour of hæmophilia and colour-blindness, both of which are carried in the X-chromosome, the author does not argue the possibility of crossing-over; this leads her to the erroneous statement (p. 56) that, theoretically, the combination of hæmophilia and colour-blindness in one male would be impossible. Recent work by Dr. Julia Bell and Professor J. B. S. Haldane has shown that such cases do actually occur, and that the genes, once together, have a very strong tendency to remain together.

However, interpretations change, whereas facts endure. And it is for the wealth of reliable facts, clearly expressed, that this work will form a valuable addition to genetical literature.

H. GRÜNEBERG.

Klein, Dr. (Editor). *Wer ist erbggesund und wer ist erbkrank?* Thirteen lectures by W. Klein, O. v. Verschuer, W. Weitz, F. Curtius, K. Diehl, F. W. Bremer, J. Lange, C. Adam, H. Claus, G. Bessau, G. A. Wagner, H. Gottron and L. Kreuz. Jena, 1935. Gustav Fischer. Pp. xviii+215. 57 figures in the text. R.M. 8 (bound).

THESE thirteen lectures on the question "Who is genetically ill and who is genetically sound?" are of very unequal value. Evidently it is difficult to muster a team of competent medical geneticists at short notice. This was the problem with which Germany was confronted when genetics and eugenics were suddenly pushed into the limelight in 1933. The same problem will shortly have to be faced in this country. Genetics has been put in the medical curriculum and lecturers on medical genetics will have to be appointed to all medical schools in the near future. The ideal, of course, will be to entrust the teaching of medical genetics to men who are at the same time competent geneticists and trained medical practitioners. This combination is very rare at present. The next best thing is probably to select geneticists regardless of their medical training; they will at least teach the genetical

side properly, even though they may not have first-hand information about diseases in man. The worst solution is the appointment of clinicians who in the past have taken an amateur interest in Mendelism, but have never had a proper genetical training. They will deal with the medical aspect of the matter well enough (but that is done anyway in the medical student's training), but they will often instil wrong ideas about heredity into their pupils. This seems to be the case with certain of the authors of this book. It cannot be the task of this review to argue these points in detail. The fault evidently lies with those who made the wrong appointments.

In fairness, it should be pointed out that these critical remarks apply only to a minority of the authors, and that some of the lectures give as good an impression of the state of genetical knowledge as can be expected in a short course of lectures.

H. G. HILL.

Muckermann, Dr. Herrmann. *Verbung und Entwicklung.* Berlin and Bonn, 1937. Ferd. Dümmler. Pp. xi + 213. With 94 illustrations on plates and in the text. R.M. 4.40.

THE latest work of the well-known Roman Catholic eugenicist, Dr. Herrmann Muckermann, gives the scientific basis for his textbook of eugenics (1934). A broad outline of the cell and nucleus, reproduction and development, Mendelism and the chromosome theory of inheritance, mutation and phylogeny, human inheritance and human races is presented with remarkable lucidity and an excellent pædagogic ability. The book makes highly interesting reading, particularly in view of the controversial subjects treated. The author is a vitalist strongly influenced by Hans Driesch. To account for ontogenetic differentiation, he revives Weissmann's old theory of unequal distribution of the hereditary material during development, though he admits that the only proved case of cell division resulting in genetically different cells is that which occurs at meiosis. The palæontological evidence for